NT NAVAIR TECHNOLOGIES

Product Distribution Group

SOLUTIONS FOR THE WIRELESS WORLD

SOLUTIONS POUR UN MONDE SANS-FILS

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2012

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Android Tablet-PC Test Platform:

Existing GUISYS Innovation...

- Android v2.2
- 7" 800x480 WVGA
- Touchscreen GUI
- 3 USB ports
- Ethernet & Wi-Fi
- SD card expansion
- Web browser

..meets

State-of-the-Art Android Tablet-PC based portable Test-system provides a peerless User Experience with exceptional performance.

Supports Android app's: Web Browser, Maps, Streamed Video & Audio, Contacts & Notes, ...and more!

Guisys GB 310 RITS Intelligent Timing Test Set

Features

- Test and qualify your DS1 Timing & 64K Composite clocks
- Verify both Tip & Ring pair
- Measure Frequency, Voltages, Phase 360 deg. & uSec
- Simple Pass/Fail display
- Auto Fault Detection (Tip/Ring Open, No BPVs)
- Auto 10-channel test and/or Single Channel
- Local or Remote Interface Control
- Fully-Integrated with DS1/DS0 or DS310 Test BRIC

GUISYS GB101: DS1 Test Set

Features

- Palm PDA or PC/Laptop Graphical User Interface
- Comprehensive DS1 Test BRICK (3"x9"x1" <2lbs)
- Single or Dual-Independent DS1 Test sets in 1 Package
- Monitor both CO and Station or Drop DS0 to Butt-set
- Complete Generic & 16-bit HDSL Loopback Codes
- Smart or Intelligent Line Repeater Codes
- Add DS3, PRI-ISDN, DS0-Data & DDS circuit testing
- Add DS0-Voice, Signaling, 2-wire Signaling-TIMS
- Test and Log Results using Circuit-ID's
- Uses Wired or BlueTooth Communication

GUISYS GB104: Signaling Test Set with Wideband TIMS

Features

- Palm PDA or PC/Laptop Graphical User Interface (GUI)
- Station (PBX) and CO Modes
- Loop-Start, Ground-Start, DID, Immediate and WINK Signaling
- Generate -48vDC Battery, RINGING and Dial-tone
- Generate Tones and Measure Frequency, Level and Noise
- 2-wire 600, 900 and 1200 ohm Termination
- Monitor Line Voltages and Current
- Fully-Integrated with DS1/DS0, DS310 or PRI-ISDN Test BRICK
- Run Three to Five Independent Circuit Tests with One BRICK!
- Optional 100/135ohm Wide-band module measures to 2MHz
- Programmed tones and Auto-Sweep from 20Khz to 2MHz simplify insertion loss measurements for xDSL line qualification

GUISYS Pri-ISDN Test Set

Features

- PBX (TE) or CO (NT) Modes: Emulate the CPE or the Network
- Up to 23 Simultaneous Calls on any B-Channel
- Place and Receive Voice, Data or Audio Calls
- Quick-TAP Q.931 Protocol Decodes into easy-to-read ASCII text quickly identifies the cause of Call failures.
- BERT the selected B-Channel (2047, 511, all-1's, etc.)
- Use Telset/Butt-set to Listen & Talk on any B-Channel
- Fully-Integrated with DS1/DS0 or DS310 Test BRICK
- Up to SIX Independent Test sets in One small test set!
- Test and Log Results using Circuit-ID's
- Uses Wired or Wireless Communication

ROHDE&SCHWARZ

R&S®FSH4/8 Handheld Spectrum Analyzer

Key Features

- Frequency range from 9 kHz to 3.6 GHz or 8 GHz
- High sensitivity (<–141 dBm (1 Hz), with preamplifier <–161 dBm (1 Hz))
- Low measurement uncertainty (<1 dB)
- Measurement functions for all important measurement tasks related to the startup and maintenance of transmitter systems
- Internal tracking generator and VSWR bridge with built-in DC voltage supply (bias)
- Two-port network analyzer
- Easy-to-replace Li-ion battery for up to 4.5 h of operation
- Rugged, splash-proof housing for rough work in the field
- Easy handling due to low weight (3 kg with battery) and easy-to-reach function keys
- Saving of measurement results on SD card
- LAN and USB interface for remote control and transfer of measurement data
- R&S®FSH4View software for simple documentation of measurement results

R&S® FSH18 Spectrum Analyzer

Spectrum analysis anywhere, anytime – on earth and in space

The R&S®FSH is the ideal spectrum analyzer for cost-effective signal investigations in the field. It provides a large number of measurement functions and so can handle anything from the installation or maintenance of a mobile radio base station up to on-site fault location in RF cables to development and service — an extensive range of applications.

Key Features

- Frequency range up to 18 GHz
- Easy operation, low weight and rugged design for field use
- Four hours operating time on battery power
- Storage of up to 256 traces and setups
- Easy data transfer to PC
- High measurement accuracy

The R&S®FSL is an extremely lightweight and compact spectrum analyzer that is ideal for a large number of applications in development, service and production. Despite its compact size, it offers a wealth of functions more typical of the high-end range, thus ensuring an excellent price/performance ratio. The R&S®FSL is the only instrument in its class that features a tracking generator up to 18 GHz and can analyze signals with a bandwidth of 28 MHz. In addition, the R&S®FSL18, which operates at frequencies up to 18 GHz, supports applications in the microwave range.

- FSL-K93 (option) WiMAX Application Firmware for spectrum and modulation measurements on stationary and mobile WiMAX signals.
- 9 Khz to 3, 6 or 18GHz, with or without tracking generator
- Best performance in its class: DANL –142 dBm, IP3 typ. +10 dBm, phase noise typ. –103 dBc
- Comprehensive measurement routines: TOI, OBW, Time Domain Power, CCDF, channel/adjacent channel power
- LAN interface and USB host adapter
- Unique slide-in upgrade design: all hardware options are user-installable without opening the housing

Note: there is one vital accessory for your R&S®FSL that we don't carry. You'll have to visit the hardware store for that.

R&S®ZVH Cable and Antenna Analyzer

Key Features

- Frequency range from 100 kHz to 3.6 GHz or 8 GHz
- 100 dB (typ.) dynamic range for filter and antenna isolation measurements
- Built-in DC voltage supply (bias) for active components such as amplifiers
- Power meter option
- Saving of measurement results on SD memory card or USB memory stick
- Easy operation with user-configurable test sequences (wizard)
- Easy-to-replace Li-ion battery for up to 4.5 h of operation
- Rugged, splash-proof housing for rough work in the field
- Easy handling due to low weight (3 kg with battery) and easy-to-reach function keys

R&S®CTH100A/R&S®CTH200A Portable Radio Test Set

Key Features

- Frequency measurement
- Power measurement
- Over-the-air measurement (R&S®CTH200A)
- Distance-to-fault measurement (R&S®CTH200A)
- Voice reporting (R&S®CTH200A)

R&S®FSC Spectrum Analyzer

Key Features

- Frequency range 9 kHz to 3 GHz or 6 GHz
- Resolution bandwidths 10 Hz to 3 MHz
- High sensitivity (< –141 dBm (1 Hz), with optional preamplifier < –161 dBm (1 Hz))
- High third order intercept (> 10 dBm, typ. 15 dBm)
- Low measurement uncertainty (< 1 dB)
- Internal tracking generator (model .13/.16)
- Compact dimensions
- Low power consumption (12 W)

R&S®NRP2 Power Meter

Key Features

- Power measurements with a base unit or with cost-efficient USB power sensors alone
- Average, peak and peak-to-average power measurements from DC to 67 GHz
- Versatile USB power sensors with superior performance
- Accurate measurements for GSM/EDGE, 3G, WLAN, WiMAX™, LTE and beyond
- Complex signals with digital modulation are handled as easily as are CW signals, carriers with analog modulation and pulsed RF
- Solutions for radar and EMC applications
- Ultra-fast statistical analysis
- Flexible use with signal generators, signal analyzers and network analyzers from Rohde & Schwarz

R&S®NRP-Z Sensors

Brief Description

No matter whether you work in the lab or in production – the Microwave Power Meter R&S®NRP is always the right choice. The versatility of the novel Power Meter Series R&S®NRP is due to the newly developed sensors. These sensors are intelligent standalone instruments that communicate with the base unit or a PC via a digital interface. The **SMART SENSOR TECHNOLOGY™** now implemented for the first time, sets new standards in terms of universality and accuracy.

Key Features

- Dynamic range: up to 90 dB (sensor dependent)
- Level range: -67 dBm to +45 dBm (sensor dependent)
- Frequency range: DC to 67 GHz (sensor dependent)
- Measurement speed: 1500 measurements per second in the buffered mode
- Linearity uncertainty: 0.0007 dB
- Precise average power measurements irrespective of modulation type and bandwidth
- Flexible measurements on up to 128 time slots per power sensor (26 time slots with base unit)
- Direct USB connection from sensor to a PC
- S parameter correction of components between sensor and test object
- 2 years calibration cycle for base unit as well as for the sensors

ZVL Vector Network Analyzer

The cost-efficient compact class in network analysis

- Frequency ranges from 9 kHz to 3 GHz/6 GHz/13.6 GHz
- Wide dynamic range: >115 dB, typ. 123 dB
- Bidirectional test set: display of all four S-parameters
- 75 Ω version from 9 kHz to 3 GHz for TV/CATV
- Complete spectrum analyzer as an option
- Compact size and low weight (<7 kg)
- Digital communications standards
- Accurate power measurement (USB connector for R&S® NRP-Z power sensor series)
- Compact size and low weight (<7 kg)
- 12 V DC operation and internal battery
- Connection for external monitor

The New Standard of Excellence in Analog Signal Generation

R&S®SMA100A

The R&S®SMA100A combines superior signal quality with a very high setting speed, making it the ideal generator for any task in development, production, service or maintenance.

Key Features

- Frequency range from 9 kHz to 3 GHz or 6 GHz with or without an electronic attenuator
- CW signal and all common types of analog modulations (AM, FM, φM, PM)
- Very low phase noise
- High power output as standard
- Optional removable mass memory card

Setting Standards in Mid-range Analog Signal Generation

R&S®SMB100A

The R&S®SMB100A sets new standards in its class due to its outstanding characteristics. The instrument combines excellent signal quality with very high output power, which makes it ideal for any task.

Key Features

- Wide frequency range from 9 kHz to 1.1/2.2/3.2/6 GHz or from 100 kHz to 12.75/20/40 GHz
- Excellent signal characteristics with low SSB phase noise of typ. –128 dBc (at 1 GHz, 20 kHz offset)
- High output power of typ. up to +27 dBm
- All important analog modulations with AM, FM/φM and pulse modulation supported
- Compact size with only two height units, 3/4 19” width and low weight

Best Price/Performance Ratio and Smallest Size in its Class

R&S®SMC100A

The R&S®SMC100A is the newest analog signal generator that Rohde & Schwarz has to offer. It has a very small size and is priced very attractively to reduce overall total cost of ownership.

Key Features

- Frequency range from 9 kHz to 1.1 GHz or 3.3 GHz
- Outstanding signal quality
- All analog modulation types and high output power as standard
- Electronic attenuator
- Low phase noise and fast switching time

Generating Signals for Today and Tomorrow

R&S®SMBV100A

The R&S®SMBV100A is a state-of-the art vector signal generator that has been designed with a future-proof hardware concept.

Key Features

- Frequency range from 9 kHz to 3.2 GHz or 6 GHz
- Excellent characteristics and high output power as standard
- Wide RF signal bandwidth of up to 120 MHz with internal signal generation
- Maximum supported external RF bandwidth is 500 MHz
- Supports all of the important digital standards available now such as WiMAX, 3GPP and LTE, as well as any future digital standards still in development

Compact, cost-effective measuring receiver

R&S®ESL EMI Test Receiver

The R&S®ESL EMI test receiver combines two instruments in one, measuring EMC disturbances in accordance with the latest standards and also serving as a full-featured spectrum analyzer for diverse lab applications. The R&S®ESL is the ideal instrument for small budgets.

Key Features

- Frequency range from 9 kHz to 3 GHz or 9 kHz to 6 GHz covering almost all commercial EMC standards
- First-ever combination of an EMI test receiver and spectrum analyzer in the entry-level class
- All major functions of an advanced EMI test receiver, including fully automated test sequences
- Weighting detectors: max./min. peak, average, RMS, quasi-peak as well as average with meter time constant and rms-average in accordance with the latest version of CISPR 16-1-1
- Compact, lightweight instrument, can be battery-powered for mobile applications

R&S®HE300

Active Directional Antenna

20 MHz (optional 9 kHz) to 7.5 GHz

The practical and very wideband R&S®HE300 active directional antenna locates transmitters and interference sources when combined with portable receivers (e.g. the R&S®PR100).

Three exchangeable antenna modules that are supplied with the antenna cover the 20 MHz to 7.5 GHz frequency range. An additional module (R&S®HE300HF for 9 kHz to 20 MHz) is available as an option.

The modules can be plugged into the handle with the correct orientation for vertical or horizontal polarization and then mechanically locked in place.

A built-in, low-noise wideband amplifier can be activated to enhance system sensitivity (active mode).

In passive mode, the amplifier is bypassed so that the R&S®HE300 can also be used in the vicinity of strong signal sources.

Key Features

- Unambiguous radiation pattern
- Direction is found by orienting antenna toward maximum field strength
- Very wideband performance in a practical size
- Low weight, due to optimized selection of materials, ensures fatigue-proof handling
- Horizontal and vertical polarization
- Wide dynamic range
- Passive antenna if amplifier is switched off

350MHz 2[4] Channel Digital Oscilloscope HMO3522 [HMO3524]

- 4 GSa/s Real Time, 50 GSa/s Random Sampling, Low Noise Flash A/D Converter (Reference Class)
- 4 MPts Memory, Memory Zoom up to 100,000:1
- MSO (Mixed Signal Opt. HO3508 [HO3516]) with 8 [16] Logic Channels
- Serial Bus Trigger and Hardware accelerated Decode incl. List View, I2C, SPI, UART/RS-232, CAN, LIN (optional)
- Automatic Search for User defined Events
- Pass/Fail Test based on Masks
- Vertical Sensitivity 1 mV/div., Offset Control ±0.2...±20 V
- 12 div. x-Axis Display Range, 20 div. y-Axis Display Range (VirtualScreen)
- Trigger Modes: Slope, Video, Pulsewidth, Logic, Delayed, Event
- 6 Digit Counter, Automeasurement: max. 6 Parameters incl. Statistic, Formula Editor, Ratiocursor, FFT: 64 kPts
- Crisp 16.5 cm (6.5") TFT VGA Display, DVI Output
- Lowest Noise Fan
- 3 x USB for Mass Storage, Printer and Remote Control optional IEEE-488 (GPIB) or Ethernet/USB

250MHz 4 Channel Digital Oscilloscope HMO2524

- 2.5 GSa/s Real Time, 25 GSa/s Random Sampling, Low Noise Flash A/D Converter (Reference Class)
- 4 MPts Memory, Memory Zoom up to 100,000:1
- MSO (Mixed Signal Opt. HO3508 [HO3516]) with 8 [16] Logic Channels
- Serial Bus Trigger and Hardware accelerated Decode incl. List View, I2C, SPI, UART/RS-232, CAN, LIN (optional)
- Automatic Search for User defined Events
- Pass/Fail Test based on Masks
- Vertical Sensitivity 1 mV/div., Offset Control ±0.2...±20 V
- 12 div. x-Axis Display Range, 20 div. y-Axis Display Range (VirtualScreen)
- Trigger Modes: Slope, Video, Pulsewidth, Logic, Delayed, Event
- 6 Digit Counter, Automeasurement: max. 6 Parameters incl. Statistic, Formula Editor, Ratiocursor, FFT: 64 kPts
- Crisp 16.5 cm (6.5") TFT VGA Display, DVI Output
- Lowest Noise Fan
- 3 x USB for Mass Storage, Printer and Remote Control optional IEEE-488 (GPIB) or Ethernet/USB

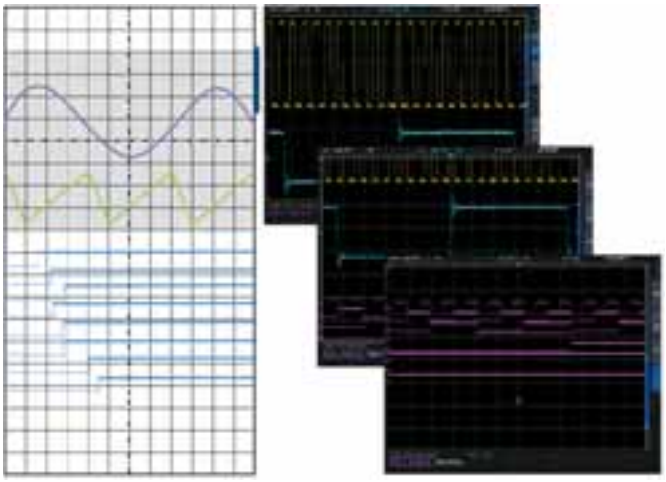
150MHz/200MHz 2[4] Channel Digital Oscilloscope HMO1522 [HMO1524]/HMO2022 [HMO2024]

- 2 GSa/s Real Time, Low Noise Flash A/D Converter (Reference Class)
- 2 MPts Memory, Memory Zoomoom up to 50,000:1
- MSO (Mixed Signal Opt. HO3508) with 8 Logic Channels
- Serial Bus Trigger and Hardware accelerated Decode incl. List View, I2C, SPI, UART/RS-232, CAN, LIN (optional)
- Automatic Search for User defined Events
- Pass/Fail Test based on Masks
- Vertical Sensitivity 1 mV/div., Offset Control ±0.2...±20 V
- 12 div. x-Axis Display Range, 20 div. y-Axis Display Range (VirtualScreen)
- Trigger Modes: Slope, Video, Pulsewidth, Logic, Delayed, Event
- Component Tester, 6 Digit Counter, Automeasurement: max. 6 Parameters incl. Statistic, Formula Editor, Ratiocursor, FFT: 64 kPts
- Crisp 16.5 cm (6.5") TFT VGA Display, DVI Output
- Lowest Noise Fan
- 3 x USB for Mass Storage, Printer and Remote Control optional IEEE-488 (GPIB) or Ethernet/USB

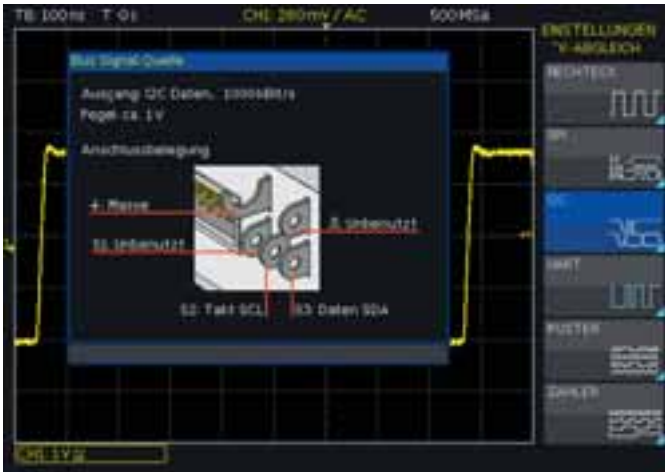
70MHz/100MHz 2[4] Channel Digital Oscilloscope HMO722 [HMO724]/HMO1022 [HMO1024]

- 2 GSa/s Real Time, Low Noise Flash A/D Converter (Reference Class)
- 2 MPts Memory, Memory Zoomoom up to 50,000:1
- MSO (Mixed Signal Opt. HO3508) with 8 Logic Channels
- Serial Bus Trigger and Hardware accelerated Decode incl. List View, I2C, SPI, UART/RS-232, CAN, LIN (optional)
- Automatic Search for User defined Events
- Pass/Fail Test based on Masks
- Vertical Sensitivity 1 mV/div.
- 12 div. x-Axis Display Range, 20 div. y-Axis Display Range (VirtualScreen)
- Trigger Modes: Slope, Video, Pulsewidth, Logic, Delayed, Event
- Component Tester, 6 Digit Counter, Automeasurement: max. 6 Parameters incl. Statistic, Formula Editor, Ratiocursor, FFT: 64 kPts
- Crisp 16.5 cm (6.5") TFT VGA Display, DVI Output
- Lowest Noise Fan
- 3 x USB for Mass Storage, Printer and Remote Control optional IEEE-488 (GPIB) or Ethernet/USB

HMO – Innovations in Oscilloscopes

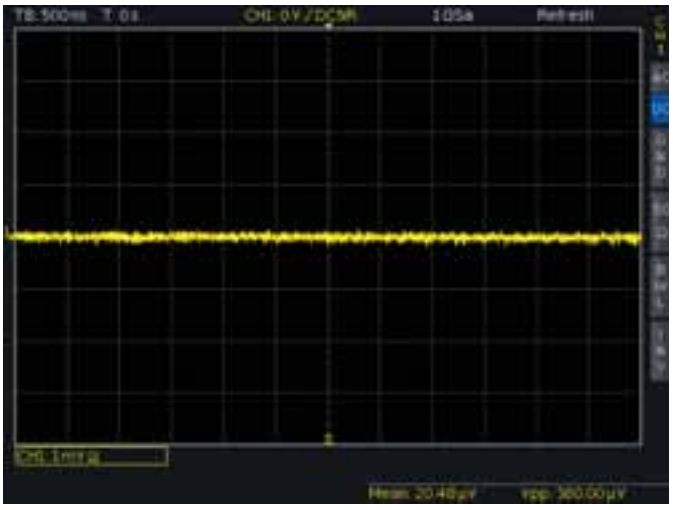


VirtualScreen — a HAMEG only and industry first in oscilloscopes.This feature make the handling of many signals easy. The extension to 20 Division is access able with one button and the universal knob.

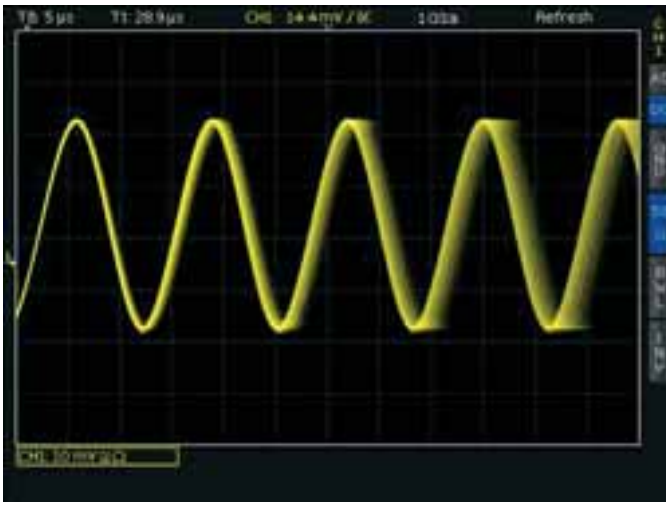


Built in signal source for square wave, serial pattern (I2C, SPI, UART) or 4 bit wide parallel (random or counter pattern) — again a HAMEG only and industry first.

HMO – sensitive, low noise and fast



All HMO scopes have hardware sensitivity of 1mV/div and have the lowest noise — required for accurate measurements at small signals.



The new HMO series have an update rate of up to 2000 waveforms per second. For example this enables the display of modulated signals.

1GHz [3GHz] Spectrum Analyzer HMS1000 [HMS3000]

- ❑ Frequency Range 100 kHz…1 GHz [3 GHz]
- ❑ Tracking Generator HMS1010 [HMS3010] -20…0 dBm
- ❑ Amplitude Measurement Range -114…+20 dBm DANL -135 dBm with Preamp. Option HO3011
- ❑ Sweep Time 20 ms…1000s
- ❑ Resolution Bandwidth 100 Hz…1 MHz in 1–3 Steps, 200 kHz (-3 dB); additional 200 Hz, 9 kHz, 120 kHz, 1 MHz (-6 dB)
- ❑ Spectral Purity <-100 dBc/Hz (@100 kHz)
- ❑ Video Bandwidth 10 Hz…1 MHz in 1–3 Steps
- ❑ Integrated AM and FM Demodulators (Phone and int. Speaker)
- ❑ Detectors: Auto-, Min-, Max-Peak, Sample, RMS, Quasi-Peak
- ❑ 8 Markers with Delta Marker, miscellaneous Peak Functions
- ❑ Crisp 16.5 cm (6.5") TFT VGA Display, DVI Output
- ❑ 3 x USB for Mass-Storage, Printer and Remote Control

1GHz Spectrum Analyzer HMS1000E

NEW

- ❑ Frequency Range 100 kHz…1 GHz
- ❑ Amplitude Measurement Range -104…+20 dBm
- ❑ Sweep Time 20 ms…1000s
- ❑ Resolution Bandwidth 10 kHz…1 MHz in 1–3 Steps, 200 kHz (-3 dB)
- ❑ Spectral Purity <-100 dBc/Hz (@100 kHz)
- ❑ Video Bandwidth 1 kHz…1 MHz in 1–3 Steps
- ❑ Integrated AM and FM Demodulator (Phone and int. Speaker)
- ❑ Detectors: Auto-, Min-, Max-Peak, Sample, RMS
- ❑ 8 Marker with Delta Marker, miscellaneous Peak Functions
- ❑ Crisp 16.5 cm (6.5") TFT VGA Display
- ❑ 3 x USB for Mass-Storage, Printer and Remote Control,

EMC Precompliance Set 1 (1 GHz)

EMC-PCS1

The EMI pre compliance Set from HAMEG consist of all necessary instruments and software to measure typical EMI problems. It includes the modern spectrum analyzer HMS1000, the Line Impedance Stabilization Network HM6050-2, the HZ530 probe set and the HM Explorer software for Windows.

HMS1000

- ❑ 1 GHz Spectrum Analyzer
- ❑ Frequency Range 100kHz…1GHz
- ❑ Sweep Time 20ms…1000s
- ❑ Resolution Bandwidth 1kHz…1MHz in 1–3 Steps, 200kHz (-3dB), additional 9kHz, 120kHz, 1MHz (-6dB)
- ❑ Video Bandwidth 10Hz…1MHz in 1–3 Steps

HM6050-2

- ❑ Line Impedance Simulation Network
- ❑ Measurement of Line-conducted Interference within the Range from 9kHz…30MHz (CISPR 16) Switchable Transient Limiter
- ❑ Artificial Hand Connector

HZ530

- ❑ The HZ530 Probe Set consists of three active broadband probes for EMI diagnosis.
- ❑ H-field probe
- ❑ High-impedance probe
- ❑ E-field probe

HM Eplorer

Spectrum Analyzer software HM Explorer to make the EMI pre complicance measurements.(support Standard Interface HO720 RS232/USB and Windows®)

Programmable 3[4] Channel High-Performance Power Supply HMP4030 [HMP4040]

- 3 x 0…32 V/0…10 A 384 W max.
  [4 x 0…32 V/0…10 A 384 W max.]
- 384 W Output Power realized by intelligent Power Management
- Low Residual Ripple: <150 µVrms due to linear Post Regulators
- High Setting- and Read-Back Resolution of 1 mV up to 0.2 mA
- Keypad for direct Parameter Entry
- Galvanically isolated, earth-free and short circuit protected Output Channels
- Advanced Parallel- and Serial Operation via V/I Tracking
- EasyArb Function for free definable V/I Characteristics
- FuseLink: Individual Channel Combination of Electronic Fuses
- Free adjustable Overvoltage Protection (OVP) for all Outputs
- All Parameters clearly displayed via LCD/Illuminated Buttons
- Rear Connectors for all Channels including Sense
- USB/RS-232 Interface, optional Ethernet/USB or IEEE-488 (GPIB)

Programmable 2[3] Channel High-Performance Power Supply HMP2020 [HMP2030]

- 1 x 0…32 V/0…10 A 1 x 0…32 V/0…5 A 188 W max.
  [3 x 0…32 V/0…5 A 188 W max.]
- 188 W Output Power realized by intelligent Power Management
- Low Residual Ripple: <150 µVrms due to linear Post Regulators
- High Setting- and Read-Back Resolution of 1 mV up to 0.1 mA
- Galvanically isolated, earth-free and short circuit protected Output Channels
- Advanced Parallel- and Serial Operation via V/I Tracking
- EasyArb Function for free definable V/I Characteristics
- FuseLink: Individual Channel Combination of Electronic Fuses
- Free adjustable Overvoltage Protection (OVP) for all Outputs
- All Parameters clearly displayed via LCD/Illuminated Buttons
- Rear Connectors for all Channels including Sense
- USB/RS-232 Interface, optional Ethernet/USB or IEEE-488 (GPIB)

Triple Power Supply HM7042-5

- 2 x 0…32 V/0…2 A 1 x 0…5.5 V/0…5 A
- High-Performance and inexpensive Laboratory Power Supply
- Floating, overload and short-circuit proof Outputs
- Separate Voltage and Current Displays for each Output 4 Digits at Channel 1+3; 3 Digits at Channel 2
- Display Resolution: 10 mV/1 mA at Channel 1+3; 10 mV/10 mA at Channel 2
- Protection of sensitive Loads by Current Limit or Electronic Fuse
- Pushbutton for activating/deactivating all Outputs
- Low Residual Ripple, high Output Power, very good Regulation
- Parallel (up to 9 A) and Series (up to 69.5 V) Operation
- Temperature-controlled Fan

25MHz [50MHz] Arbitrary Function Generator HMF2525 [HMF2550]

- ❑ Frequency Range 10 µHz…25 MHz [50 MHz]
- ❑ Output Voltage 5 mVpp…10 Vpp (into 50 Ω) DC Offset ±5 mV…5 V
- ❑ Arbitrary Waveform Generator: 250 MSa/s, 14 Bit, 256 kPts
- ❑ Sine, Square, Pulse, Triangle, Ramp, Arbitrary Waveforms incl. Standard Curves (white Noise, Cardiac etc.)
- ❑ Total harmonic Distortion 0.04 % (f <100 kHz)
- ❑ Burst, Sweep, Gating, external Trigger
- ❑ Rise Time <8 ns, in Pulse Mode 8…500 ns Variable-Edge-Time
- ❑ Pulse Mode: Frequency Range 100 µHz…12.5 MHz [25 MHz], Pulse Width 15 ns…999 s, Resolution 5 ns
- ❑ Modulation Modes AM, FM, PM, PWM, FSK (int. and ext.)
- ❑ 10 MHz Timebase: ±1 ppm TCXO, rear I/O BNC Connector
- ❑ Front USB Connector: Save and Recall of Waveforms and Settings
- ❑ 8.9 cm (3.5") TFT: crisp Representation of the Waveform and all Parameters
- ❑ USB/RS-232 Dual-Interface, optional Ethernet/USB or IEEE-488 (GPIB)

6½ – Digit Precision Multimeter HM8112-3 [HM8112-3S]

- ❑ 6½-Digit Display (1,200,000 Counts)
- ❑ Resolution: 100 nV, 100 pA, 100 µΩ, 0.01 °C/F
- ❑ DC Basic Accuracy 0.003 %
- ❑ 2-Wire/4-Wire Measurements
- ❑ Measurement Intervals adjustable from 0.1…60 s
- ❑ Up to 100 Measurements per Second transmitted to a PC
- ❑ True RMS Measurement, AC and DC+AC
- ❑ Mathematic Functions: Limit Testing, Minimum/Maximum, Average and Offset
- ❑ Temperature Measurements with Platinum (PT100/PT1000) and Ni (K and J types) Sensors
- ❑ Internal Data Logger for up to 32,000 Measurement Results
- ❑ Offset Correction
- ❑ Galvanically isolated USB/RS-232 Interface, optional IEEE-488 (GPIB)
- ❑ [HM8112-3S]: HM8112-3 incl. Scanner

200kHz LCR-Bridge HM8118

- ❑ Basic Accuracy 0.05 %
- ❑ Measurement Functions L, C, R, |Z|, X, |Y|, G, B, D, Q, , , M, N
- ❑ Test Frequencies 20 Hz…200 kHz
- ❑ Up to 12 Measurements per Second
- ❑ Parallel and Series Mode
- ❑ Binning Interface HO118 (optional) for automatic Sorting of Components
- ❑ Internal programmable Voltage and Current Bias
- ❑ Transformer Parameter Measurement
- ❑ External Capacitor Bias up to 40 V
- ❑ Kelvin Cable and 4-Wire SMD Test Adapter included in Delivery
- ❑ Galvanically isolated USB/RS-232 Interface, optional IEEE-488 (GPIB)

3GHz Programmable Counter HM8123

- ❑ Measurement Range 0 Hz…3 GHz
- ❑ 2 Measurement Inputs DC…200 MHz, 1 Measurement Input 100 MHz…3 GHz
- ❑ Input Impedance A/B: 1 MΩ/50 Ω (switchable), Sensitivity 25 mVrms
- ❑ Input Impedance C: 50 Ω, Sensitivity 30 mVrms
- ❑ 400 MHz Time Base with 0.5 ppm Stability
- ❑ 10-Digit Resolution at 10 s Gate Time
- ❑ 9 Measurement Functions, external Gate and Arming
- ❑ Input for external Time Base (10 MHz)
- ❑ Standard: TCXO (Temperature Stability: ±0.5 x 10-6) Optional: OCXO (Temperature Stability: ±1 x 10-8)
- ❑ Intuitive One-Pushbutton Operation. Each Function directly Addressable
- ❑ Galvanically isolated USB/RS-232 Interface, optional IEEE-488 (GPIB)

SignalHawk™

SIGNALHAWK™ VNA | Spectrum Analyzer with Power Meter Option

MODEL SH-362S: Spectrum Analyzer & 2-Port VNA
MODEL SH-361S: Spectrum Analyzer & 1-Port VNA
MODEL SH-362: 2-Port VNA (1.6MHz-3.6GHz)
MODEL SH-36S: Spectrum Analyzer (100kHz to 3.6GHz)

Bird Technologies SignalHawk™ Analyzes radio frequency spectrum. Measures intended and interfering signals. Allows setup of parameters such as frequency, amplitude, and markers. Graphically displays signal amplitude vs. frequency and saves traces.

Model SH-36S SignalHawk™

SignalHawk™ VNA|Spectrum Analyzer

KEY FEATURES

- Fast, Accurate, and Sensitive: -42 dB Directivity and-135 dBm Noise Floor
- Large High-Resolution Display: Full Color, Indoor/Outdoor Viewable
- Easy-to-Use: Intuitive Menus, One-Button Setup, and On-Board Help
- Long Battery Life: 5.5 Hours per Charge, Field Replaceable Battery
- Rugged: Drop Tested per Military and European Standards
- USB Connectivity: USB Drive Stores 90,000 Traces
- Spectrogram
- GPS
- Power measurement interface
- Internal Bias – Tee

ALSO AVAILABLE

Bird®Rack-Mount SignalHawk™ Spectrum Analyzer

Model SH-36S-RM: 100kHz to 3.6 GHz

Remotely analyzes the radio frequency spectrum. From your office: measures intended and interfering signals, allows setup of parameters such as frequency and amplitude markers. Also, remotely displays signal amplitude vs. frequency and saves traces to your PC.

Bird®PC SignalHawk Spectrum Analyzer

Model SH-36S-PC: 100kHz to 3.6 GHz

Analyzes the radio frequency spectrum. Measures intended and interfering signals, allows setup of parameters such as frequency and amplitude markers. Also, displays signal amplitude vs. frequency and saves traces on your PC.

WORLDWIDE APPLICATIONS

Cellular, PCS, DCS, 2G, 3G, 4G, CDMA, cdmaOne, CDMA 2000, 1x, 1x EV-DO, GSM, GPRS, EDGE, UMTS, HSDPA,W-CDMA, TDMA, AMPS 802.11, Bluetooth, Broadcast, Emergency, Fire, GPS, HDTV, IBOC, In-Building, Lab, Microwave, NPSPAC, Paging, Police, Private, Project 25, Public Safety, Tactical Military, Telematics, Tetra, Trunking, Utilities,WiMAX,WLAN and WLL.

Bird® Model 5000-XT
Hand-Held Digital Power Meter

The hand-held digital power meter has been completely redesigned with the new Bird® 5000-XT. Ideally suited for field techs and engineers who need to make power measurements anywhere they go, the 5000-XT's new user interface has an intuitive, menu-driven design, making it the easiest to use on the market. It's operable even with one hand and compatible with all our field and legacy sensors.

Bird® AT Series
AT-500 & AT800
Antena Testers

The **Bird AT-Series Antenna Testers** provide a cost-effective, fast, graphical way of determining the quality of mobile and base station antennas.

- Rugged, easy-to-use, hand-held design with extended battery life makes it ideal for use in the field.
- Tests the system in VSWR, Return Loss, Match Efficiency, or Reflection Coefficient (Rho)
- Single frequency readings and frequency sweeps allow for everything from pinpointests to system optimization and tuning.
- Can save up to 12 traces for comparison and tracking over time
- RS232 Interface allows communication with a PC for saving traces using the optional software.

BIRD® ANTENNA & CABLE MONITOR

Minimize Downtime
Keep Your Critical Antenna Sites Up & Running

BIRD® ANTENNA & CABLE MONITOR
Accurately detects antenna system degradation and failures

- Compatible with analog or digital cellular and two-way radio systems
- Worldwide applications include Tetra, Cellular, PCS and many others
- Monitors VSWR and power levels and provides alarm outputs
- Sensitive to antenna faults that internal transmitter VSWR monitors may not detect
- Local or remote operation via PC software
- Ideal for multi-carrier applications

Antenna & Cable Monitor

PC Software Tool 7005A970 (Optional Accessory)

Bird® Wideband Power Sensor

5012A, 5016, 5017, 5018, 5019

Bird's® Wideband Power Sensor (WPS) never requires field calibration, only requires calibration once per year and is traceable to National Institute of Standards and Technology (NIST). The WPS measures True Average Power, Peak Power, and Duty Cycle directly with exceptional accuracy and uses these precise measurements to calculate a wide range of other important factors, such as VSWR, Return Loss, Reflection Coefficient, Crest Factor, Average Burst Power, and CCDF.

PROBLEMS

Downtime is necessary

Have analog, digital, and multi-carrier signals to measure

Tight budgets

Varying field tech skill levels

Need greater confidence in measurement

SOLUTIONS

Monitor and perform maintenance for monitoring while DUT is in-service

Measure forward and reflected power to troubleshoot system failures

Modulation independent measurements

USB connectivity, no meter required

Sensor plugs and plays with 5000-XT meter

No field calibration required

NIST traceable calibration

APPLICATIONS

WPS measures: Analog Cellular, Digital Cellular, 3G, 4G, Tetra, APCO/P25, Trunking, CDMA, TDMA, WCDMA, GSM, Transportation, Tactical Military, Radar, Avionics, Marine, LMR, Analog Broadcast, Digital Broadcast, GSM, GPRS, EDGE, UMTS, HSDPA, Bluetooth, Fire, GPS, NPSPAC, Paging, Project 25, Public Safety, Telematics, Utilities, WIMAX and WLAN.

Measurements performed: Peak power, true average power and Duty Cycle.

Calculations Performed: VSWR, Return Loss, Reflection Coefficient, Crest Factor, Average Burst Power and CCDF.

Bird® Site Analyzer XT Series

SA-3600XT (25-3600 MHz)
SA-6000XT (25-6000 MHz)

- One unit covers the entire 25-6000 MHz range!
- Easy to operate and field ready for first-time, occasional and experienced users.
- Other applications include 3G, Broadcast, Government, Tactical Military, Microwave, Paging, Public Safety, Trunking, WLAN and WLL, and TETRA.
- Color display is clearly visible in direct sunlight.
- With a single download you can view data as Distance to Fault or Measurement Match-no need to store two traces.
- FDR (Frequency Domain Reflectometry) measurement method results in a highly reliable assessment of the health of critical components in your system; ultimately providing a "heads-up" before a failure occurs.
- Fault location or DTF mode indicates VSWR or Return Loss levels at each point along the cable and antenna system length.
- Cable Loss function measures insertion loss of the cable system over a given frequency range.
- USB communication ports for connection to PC, field sensors and storage devices.

APPLICATIONS

Suitable for use in Worldwide Cellular and PCS/DCSsystems; supporting measurement of CDMA, GSM, TDMA and AMPS modulation schemes.

Other applications include 3G, Broadcast,Government, Tactical Military, Microwave, Paging,Public Safety, Trunking, WLAN and WLL, and TETRA.

Carrier to Noise Generator CNG-70/140

APPLICATIONS:
- Bit error rate/SINAD testing
- SATCOM modems
- Channel impairment tests
- Development, qualification, and verification testing
- Manufacturing test

FEATURES:
- C/N, C/No, Eb/No, and C/I modes
- 1 or 2 independent RF channels
- Continuous input power monitoring
- Un-interrupted signal path during calibration cycle
- IEEE-488.2 and RS-232 interface
- Easy to read VFD display

RF Converter Series UDC-172-302-2

APPLICATIONS:
- A laboratory workhorse
- Programmable LO for frequency converters
- Frequency hopping source
- RF device characterization
- Tracking generator source

FEATURES:
- Low noise (-103 dBc/Hz 1 kHz offset @ 1GHz)
- Fast switching (<2msec typ.)
- Small and lightweight (10" x 10" x 3")
- Non-volatile memory for storage/recall of instrument settings
- IEEE-488.2, LAN, and RS-232 interfaces standard

OPTIONS:
- Fast switching speed (200 usec)
- File driven hopping/swept frequency mode

Satellite Link Emulator SLE9000 Series

APPLICATIONS:
- Earth terminal testing
- Satellite payload testing
- Satellite system integration test beds
- Mobile transceiver testing
- UAV Testing

Optional
- Multipath Fading, 6 paths
- Digitally generated AWGN

Multiple Orbit Models
Emulates earth-to-satellite-to-earth, earth-to-satellite links; Low Earth Orbit; Medium Earth Orbit, Geostationary and Geosynchronous, satellite to satellite links and satellite to UAV testing.

Test Data Generation
dBm's standard SATGEN software data generation package or Analytical Graphics STKTM package may be used to generate the necessary test data. SLEControl, a windows based applet will automatically format download the test files for execution in dynamic mode.

Precision White Gaussian Noise Generator

APPLICATIONS:
- Bit error rate (BER) and SINAD testing
- Component and subsystem linearity characterization
- Wireless link emulation

FEATURES:
- Calibrated noise density over entire operating frequency
- Noise power/bandwidth and noise density control
- Solid state noise attenuator with 0.0156 dB resolution
- IEEE-488.2 interface

R8000B Communications System Analyzer

"General Dynamics is pleased to announce the second generation of its revolutionary R8000 communications system analyzer. The R8000B delivers a previously unimaginable result: a truly portable radio test set with more functions than yesterday's bench top analyzers. And it now offers industry-leading spectral purity, surpassing that of comparably priced and even much more expensive radio test sets.

The R8000's 14 pound weight gives technicians power and flexibility never before attainable – or currently attainable with any other instrument. This, combined with the unit's feature-packed spectrum analyzer and bright 8.4" color LCD, makes it ideal for taking to sites for infrastructure maintenance and interference measurement.

Firmware upgrades are available free via web download for the life of the unit, and new capabilities are being constantly added — so your R8000B actually becomes more powerful over time! Software and protocol options can also be added directly from the front panel in less than 30 seconds; so it is clear that the R8000B is the most flexible, robust future-proofed radio test set the industry has ever seen. The R8000B will change the way you perform radio service forever."

A Compact and Lightweight Solution

You no longer need to lug multiple pieces of heavy equipment to perform service at remote locations. The R8000 has everything you need in one compact, 14 lb. package! Among the instruments included in the R8000 are:

- Spectrum Analyzer
- Signal Generator
- Sensitive Measurement Receiver
- Tracking Generator (optional)
- SINAD Meter
- Distortion Meter
- Modulation Scope
- Oscilloscope
- Frequency Error Meter
- Cable Fault Locator (optional)
- FM Deviation Meter
- AM Modulation Meter
- Receive Signal Strength Meter
- Broadband and Narrowband Power Meters
- Audio Counter
- Audio Generator
- AC / DC Voltmeters
- DMR (MOTOTRBO™) test mode (optional)
- NXDN test mode (optional)
- TETRA Subscriber Test (optional)
- P25 test mode (optional)

The R2600 Series: The industry proven test solution for APCO™ Project 25 SMARTNET/ SmartZone®, ASTRO®, SECURENET®, and conventional two way radio.

The R2600 family of Communications System Analyzers performs tests normally associated with these instruments:

- RF Signal Generator
- Sensitive Measurement Receiver
- Spectrum Analyzer
- Full Band Duplex Offset Generator
- Frequency Counter
- AC/DC Voltmeter
- 50 kHz Oscilloscope
- RF Wattmeter
- Signal Strength Meter
- Frequency Error Meter
- SINAD Meter
- Distortion Meter
- Sweep Generator
- Audio Generator
- Modulation Analyzer
- Signaling Simulator
- RF Scan/Counter
- High Performance Spectrum Analyzer with Markers

Optional in R2600 & R2625; standard in R2670:

- Cable Fault Locator
- Tracking Generator
- Programmable Test Set-Ups

APCO is a registered trademark of the Association of Public Safety Officials ASTRO, SECURENET and SMARTNET/SAMARTZONE is a registered trademark of Motorola Inc.

R2660 iDEN™ Digital Communications System Analyzers

FEATURES:

- Average power meter
- Frequency error meter
- SQE (Signal Quality Estimate)
- Tracking generator
- Cable fault locator
- High stability oscillator
- Enhanced spectrum analyzer with markers
- Test memory presets
- BER (Bit Error Rate)In addition to offering all the standard system features, the R2660 also includes several high performance features for testing more sophisticated systems. R2660 Standard System Capabilities

iDEN-Specific Test Capabilities

- Supports both 6:1 and 3:1 TDMA format
- Subscriber unit testing in dynamic call simulation mode including vocoder for live voice testing
- Subscriber unit testing in test mode
- Base site transmitter testing under operating conditions
- Base site receiver BER testing General Diagnostic Features

R2600D – For Conventional Radio and Paging Service

FEATURES:

- RF Signal Generator
- Sensitive Measurement Receiver
- Spectrum Analyzer
- Duplex Offset Generator
- Frequency Counter
- AC/DC Voltmeter
- 50 kHz Oscilloscope
- RF Wattmeter
- Signal Strength Meter
- Frequency Error Meter
- SINAD Meter
- Distortion Meter
- Sweep Generator
- Audio Generator
- Modulation Analyzer
- Signaling Simulator
- RF Scan/Counter

R2670B Communications System Analyzer Radio and Paging Service

FEATURES:

- Both VSELP and IMBE compatible vocodes
- SMARTNET/SmartZone Type 1,1}Ipe I EP II,1}Type II)
- SECURENET Secure Voice
- Multiple encryption formats: AES, DES, DES-XL, DES-OFB, DVI.XL & DVP-XL
- Programmable with compatible KVL – no need to only utilize the built-in test keys
- ASTRO trunking with! both VSELP and IMBE vocoders
- Project 25 digital trunking with support for Linear Simulcast Modulation (LSM) -flash upgrade to system release 6.1 coming soon. The R2670 can stand up to heavy field use with a proven 33,000 hour MTBF, and a choice of AC, DC, or battery operation.

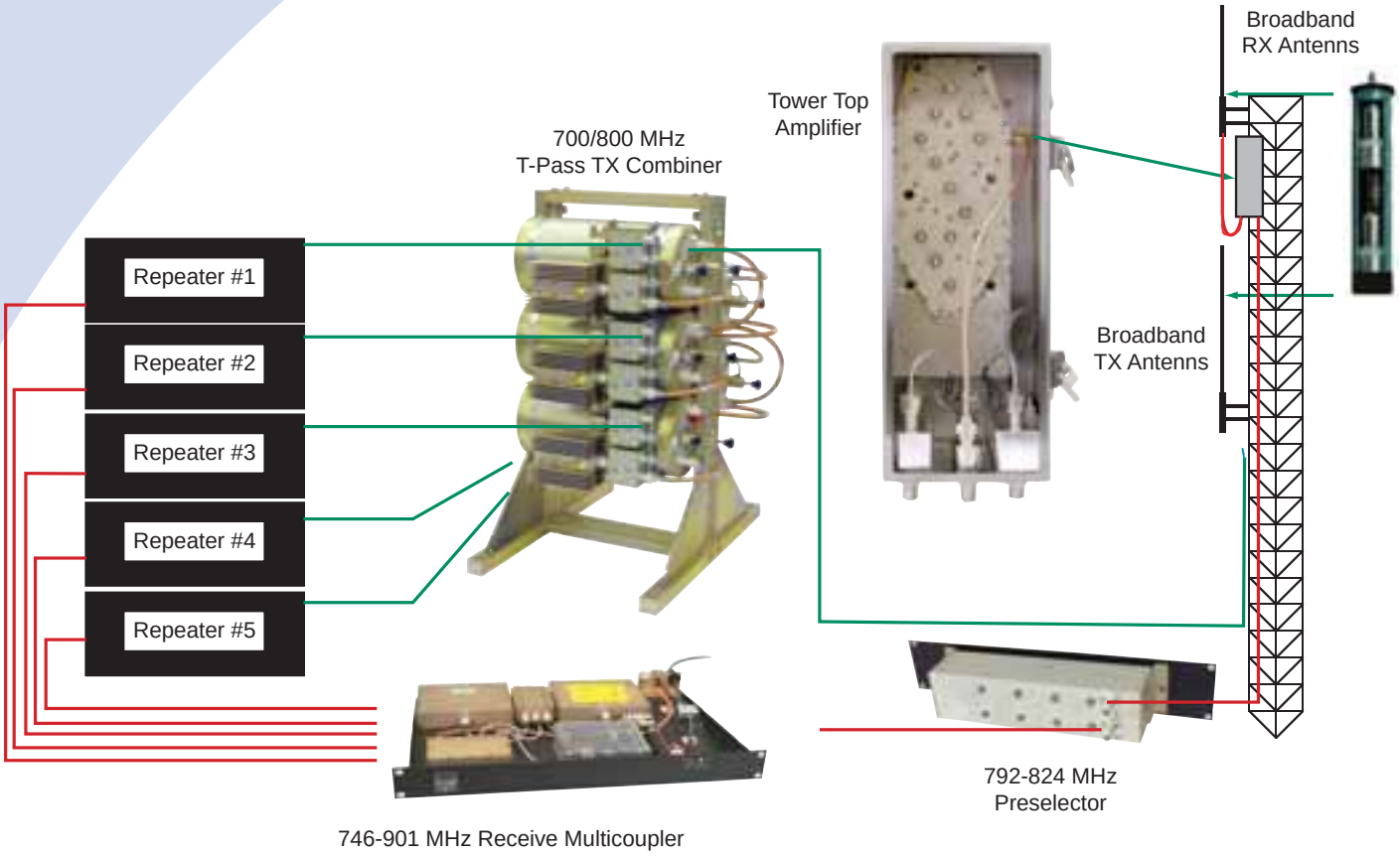
R2680 – MPT1327 Trunking Communications System Analyzer

MPT1327 Test Parameter Entries:

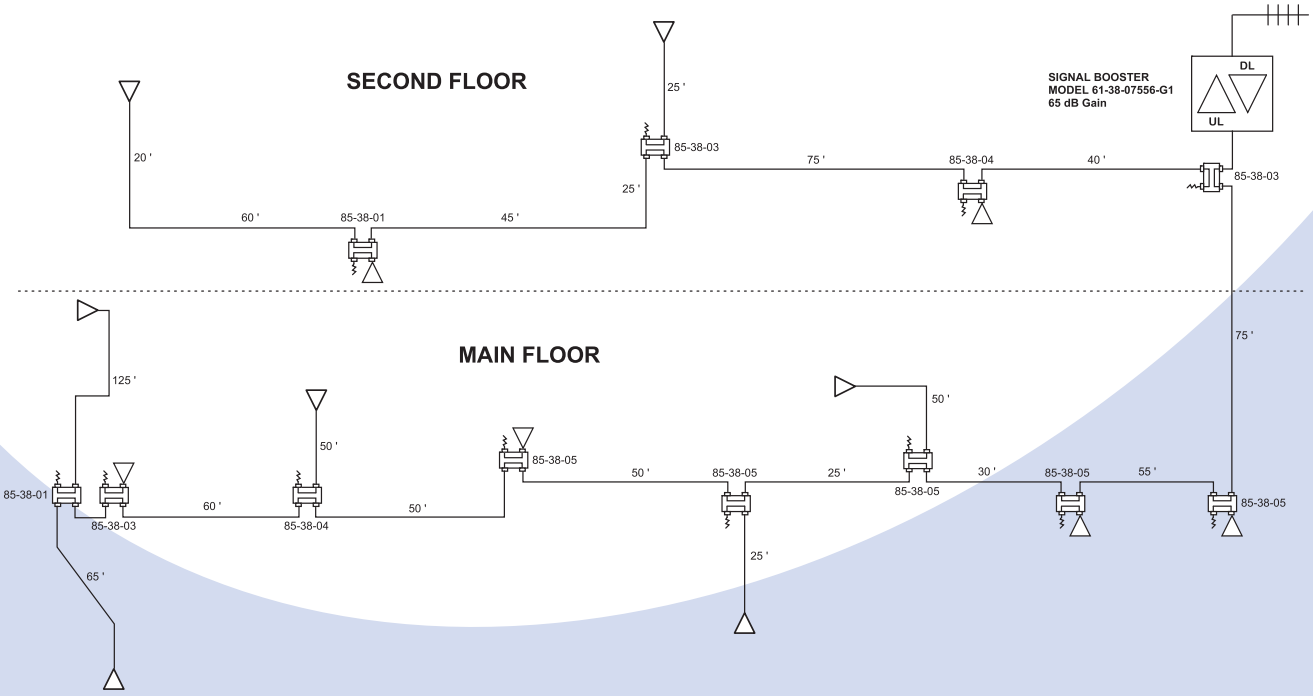
(Dependent on Test Selection)

- Signaling Type
- System ID
- Control Channel Number
- Traffic Channel Number
- Call Sequence
- Emergency Priority
- Call Set-up
- Radio ID2 (for System Initiated Tests)
- Group ID
- Group Call Type
- Status Code
- Data Codewords
- Signaling Parameters

RF INFRASTRUCTURE PRODUCTS



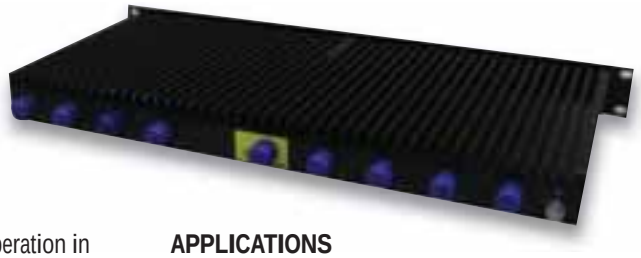
COMPLETE SYSTEMS SOLUTIONS



Multiband Shorthaul Control Station Combiner

43-05-01 Series

BTG, TX RX System multi-channel multi-band combiners provide frequency-agile operation across multiple bands. Interoperability can be combined into a single network for efficiency.



PROBLEMS

Many bands on site with frequencies from VHF to 900 MHz

Standardization across all sites

Space constraints

Cost reduction

SOLUTIONS

- Multiband combiner allows operation in multiple bands
- Advance coupler technology with no need for tuning — control stations can be connected without regard to frequency
- Low Profile for space efficient installation
- Multiple bands can utilize the same combiner for cost reduction

APPLICATIONS

Control Station Combiners operating in multiplebands may be used to reduce the number of antennas required on a communications site while also ensuring that predictable radio-to-radio isolation is maintained at all times — irrespective of individual radio's Tx or Rx operating mode or antenna isolation characteristics.

Is ideally used with multiband coupler

Bird® SB I Series Signal Boosters

62-89B, 62-90A Series NPSPAC

Bird Technologies Group, TX RX Systems brand, SB I Series family of signal boosters provides an exceptional balance of performance and value for extended coverage of radio communications networks.

PROBLEMS

RF coverage is required for different building sizes and configurations

System monitoring is required

Need to eliminate potential interference and unwanted coverage

Reliable in-building communications is a must

SOLUTIONS

- Bird® SB I is available in two output power models:
  - High power model (+35 dBm)
  - Low power model (+25.5 dBm)
- Alarm and sampler port are available
- Gain is adjustable from 0 to 30 dB in 2 dB increments
- Bird invented the signal booster and has been a leader in providing reliable in-building wireless solutions since 1980

APPLICATIONS

Cost effective in-building coverage solutions for applications in critical communications systems

Public Safety, Private Wireless networks

Excellent selectivity for operation in a shared frequency band

Bird®SB I Series Signal Boosters

62-83E-Series
Dual Band 700/800 MHz

Bird Technologies Group, TX RX Systems brand, SB I Series family of signal boosters provides an exceptional balance of performance and value for extended coverage of radio communications networks.

PROBLEMS

RF coverage is required for different building sizes and configurations

System monitoring is required

Need to eliminate potential interference and unwanted coverage

Reliable in-building communications is a must

Need to provide coverage for both 700 MHz and 800 MHz

SOLUTIONS

- Bird SB I is available in two output power models:
  - High power model (+34 dBm)
  - Low power model (+25.5 dBm)
- Alarm and sampler port are available
- Gain is adjustable from 0 to 30 dB in 2 dB increments
- Bird invented the signal booster and has been a leader in providing reliable in-building wireless solutions since 1980
- SB I dual band provides coverage of both frequencies in one unit

APPLICATIONS

Cost effective in-building coverage solutions for applications in critical communications systems

Public Safety, Private Wireless networks

Excellent selectivity for operation in a shared frequency band

Bird®SB I Series Signal Boosters

62-91-Series
Cellular A, B, & A/B Bands

Bird Technologies Group, TX RX Systems brand, SB I Series family of signal boosters provides an exceptional balance of performance and value for extended coverage of radio communications networks.

PROBLEMS

RF coverage is required for different building sizes and configurations

System monitoring is required

Need to eliminate potential interference and unwanted coverage

Reliable in-building communications is a must

SOLUTIONS

- Bird SB I is available in two output power models:
  - High power model (+34 dBm)
  - Low power model (+25.5 dBm)
- Alarm and sampler port are available
- Gain is adjustable from 0 to 30 dB in 2 dB increments
- Bird invented the signal booster and has been a leader in providing reliable in-building wireless solutions since 1980

APPLICATIONS

Cost effective in-building coverage solutions for applications in critical communications systems

Coverage of full Cellular A/B bands or each band individually

Excellent selectivity for operation in a shared frequency band

Bird® Signal Booster II Series
61-65-50

Mission Critical Reliability for In-building Coverage . . .

The New Signal Booster II provides Public Safety grade reliability and coveragein disadvantaged RF locations for First Responders, Public Safety/Governmental agencies and Private System Users. Reliable RF coverage is gained in basements, parking garages, correctional facilities, courthouses, hospitals, malls and schools. Other challenging environments covered by the Signal Booster II product include subways and rapid transit systems, airports, stadiums/arenas, high-rise buildings and large private enterprise facilities and campuses.

Whether you are on the front line and depend on a reliable communication system or you are the systems integrator responsible for implementing adependable system, this new compact design facilitates installation and system optimization for rock solid operation via a simple man-machine interface. Imbedded features for ease of initial setup include decoupled test points for signal level detection, menu driven gain setting, front panel LED monitors for amplifier and power status, and an at-a-glance LED bargraph to indicate relative level of Output Level Control (OLC). Additionally, this product offers a unique on-board OLC Data Log feature thatarchives a User Signal Profile to facilitate optimumsystem configurationand performance.

Output Level Control (OLC) Circuit Monitors and Controls RF Output Power

- Maintains maximum required output power while preventing damage and excessive emissions per FCC requirements
- Easy-to-read LED bar graph
- Unique OLC DataLog feature facilitates system maintenance and optimization

Decoupled RF Test Points For Simplified Service

- Allow fast system measurements in both uplink and downlink directions
- Monitor signals for performance optimization
- Integrated design facilitates non-intrusive measurements

Secure, Non-Vented NEMA Enclosure Suitable for Extreme Indoor and Outdoor Environments

Optional Features Available

- Comm Card II for remote communications and control
- Fiber optic link interface
- Redundant PA configuration
- -48 VDC input

Microprocessor Controlled Fault Monitoring and Alarming Ensures Reliable Operation and Flexible Configuration

- Control system continuously monitors parameters including voltage, current, temperature and OLC activity
- LEDs on each module quickly annunciate source of fault
- Simple, back-lit liquid crystal display (LCD) and switch control
- Fault triggers annunciation on panel, alarm contact closure and internal recording of failed subsystem

Programmable Gain Setting

- Ease of initial configuration via front panel
- When used in conjunction with OLC DataLog, simplifies post installation adjustments

Three Major Gain Ranges Available

Low:+ 45 dB, Medium:+ 60 dB, High:+ 80 dB

All Signal Booster II products comes with a 5 year OEM warranty

Bird® Digital Signal Booster
Model 613-8-Series

Bird Technologies Group (BTG), TX RX Systems Digital Signal Boosteroperates in the 700/800 MHz range with 1-60 programmable digitalfilters for both uplink and downlink. Filter bandwidth is user programmablefrom 6.25 kHz to 15 MHz. Allstate-of-the-art productcomponents are protected by a NEMA 4 style enclosure to meetthe demands of the NFPA requirements. Intuitive web browser interfaceallows booster to be easily configured for changing RF environments.

PROBLEMS

Noise and Interference that cause communication problemsin a crowded spectrum.

Changes in RF environment.

System coverage is difficult toassess.

SOLUTIONS

- Digital booster can amplify severalindividual channels or narrow bands offrequencies (amplifying the desiredspectrum and preventing interferenceto other users).
- An intuitive web browser user interfaceoffers not only local but also remoteaccess from any compatible PC on the net-work maximizing flexibility to easilyimplement system changes such asoutput power, center frequency, filtershape, and group delay.
- Built-in pilot signal capability. The1 kHz FM modulated carrier allowssimple SINAD qualification testing.

APPLICATIONS

The Digital booster provides Public Safety gradereliability and coverage in challenging disadvantagedRF conditions.

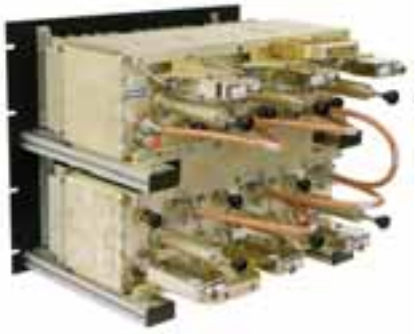
Use as head-end booster for a system that isdonored “off the air” in an RF congested area.

One digital booster can connect to any numberofbroadband boosters (SBII or SBI).

Minimizes noise and interference potential in urbanRF congested areas.

Bird® Compact Ceramic TX Combiner
Model 611-70-Series

BTG, TX RX System brand UHF Ceramic TX Combiner combines up to 6 transmitters onto a single antenna. With a footprint that’s more than 50% smaller than comparably performing 10” cavities. This optimizes valuable space for your radio equipment, which in an era of escalating lease costs, makes it the perfect solution for expansion. And because of our modular design, you can purchase in single-channel increments. Plus, it delivers the kind of high performance and minimum interference you’ve come to expect from Bird®.



PROBLEMS

May need to minimize the number of antennas at a communication site

Need to maintain or minimize additional costs associated with space in a radio shack/ transmitter shelter

Need to minimize interference with competing communication systems

And may lack the time or expertise to integrate the solution into the overall radio system

SOLUTIONS

Can combine up to six transmitters onto a single antenna which efficiently utilizes valu-able rack and shelter space

Our units provide valuable real estate in small shelters where traditional T-Pass combiners are too large

System-level signal analysis (including interference mitigation) for each customer application

Offer complete solutions from system design through individualized configurations, installa-tion support, and maintenance programs.

APPLICATIONS

Any communications system installation where you need to reduce the number of antennas on a tower.

Any communications system designed to minimize tower size and maximize site space

Secured applications that require equipment under lock and key

Bird®Compact AutoQuad™ Tower Top Amplifier System

429B-83H-01

Bird Technologies Group, TX RX Systems brand, Auto Quad Tower-Top Amplifier (TTA) system is a high performance, quadrature-coupled low noise amplifier (LNA).

The TTA operates independently, monitoring LNA current and automatically switching to a redundant LNA in the rare event of failure. Status reportingis accomplished via AISG compliant telemetry between the controlling processor in the Tower Box and the base control unit. The base control unithas an on board AISG modem device which does not require the use of anexternal data cable. This telemetry does not interfere with RF Signals in anyway and communicates the LNA currents, temperature and operational status to the base control unit LCD display. Test modes and manual switching between LNA's is also accomplished by way of the telemetry system.

The TTA consists of two components: the tower top amplifier mounted close to the antenna and the control unit. The control unit is available in two styles, either with or without a receiver multicoupler. In order to reduce the size of the TTA and simultaneously provide 120 dB of isolation of a TX carrier, filtering has been split between the TTA and the base unit.

PROBLEMS

Reliability

Fault Detection

System Testing

SOLUTIONS

All tower top ports protected byinternal surge supressors

Two independent Quad LNA's inthe tower top

Microprocessors continuouslymonitor amplifiers and will switchtower top LNA's when fault de-tected. At a glance status report-ing and form-C contacts switchingwhen alarm detected

APPLICATIONS

The TTA is designed to increase the performanceof a Base Transceiver Station (BTS) while ensuringreliable communications for critical Public Safetyapplications.

This increase in sensitivity can make up for theimbalance between mobile and handheld users incritical systems.

The TTA is used when cable losses exceeds 1.5 dB

Bird®7020 Series Power Sensor

Bird's® new 7020 Power Sensor is an economical plug andplay solution to your power measurement needs. The 7020 determines and reports Forward and Reflected True Average Power and VSWR over a wide frequency range of 350 MHz to 4.0 GHz. It also never requires field calibration, only requires factory calibration once per year, and is traceable to National Institute of Standards and Technology (NIST).

PROBLEMS

Have analog, digital, and multi-carrier signals to measure

Tight budget

Downtime is unacceptable

Varying field tech skilllevels

Need confidence inmeasurement

SOLUTIONS

Modulation independent measurements

Inline device, no directional coupler required

Complimentary Virtual Power Meter (VPM2) application

Monitor and perform maintenancefor monitoring while DUT is in-service

Measure forward and reflectedpower to troubleshoot system failures

Sensor plugs and plays with multiple display devices.

No field calibration required

NIST traceable calibration

APPLICATIONS

WPS measures: Analog Cellular, Digital Cellular, 3G, 4G,Tetra, APCO/P25, Trunking, CDMA, TDMA, WCDMA, GSM,Transportation, Tactical Military, Radar, Avionics, Marine, LMR, Analog Broadcast, Digital Broadcast, GSM, GPRS,EDGE, UMTS, HSDPA, Bluetooth, Fire, GPS, NPSPAC, Pag-ing, Project 25, Public Safety, Telematics, Utilities, WIMAX and WLAN.

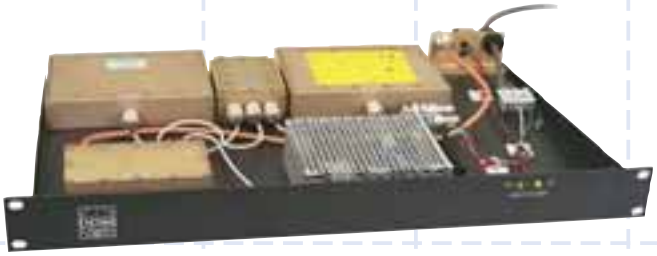
Measurements performed: Forward and Reflected

Calculations Performed: VSWR and True Average Power

Compact Receiver Multicouplers

Receiver Multicouplers

TX RX Systems Inc. has designed a new series of Compact Receiver Multicouplers that offer superior specifications in a one rack unit package. By utilizing broadband preamps and power supplies, three basic products cover most applications in the 118 - 901 MHz range.



Receiver Multicoupler Features:

- Sleek, 19" 1 RU rack mount design
- Low noise, high performance amplifiers
- AC & DC power input
  - Auto-Ranging AC Power, 85-264 VAC
  - DC Power Input, 12-24 VDC

Receiver Multicoupler Specifications

MODEL NUMBER	NUMBER OF CHANNELS	BANDWIDTH	SYSTEM GAIN (TYPICAL)*	PREAMP NOISE FIGURE	PREAMP 3RD ORDER OUTPUT INTERCEPT POINT	POWER REQUIREMENT	DC BACKUP	CONNECTORS (IN/OUT)	DIMENSIONS
42-33-01-04N	4	118-174 MHz	22 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-33-01-08N	8	118-174 MHz	15 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-33-01-12N	12	118-174 MHz	15 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-33-01-08	8	118-174 MHz	17 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-33-01	16	118-174 MHz	10 dB	2.0 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-57-01-04N	4	380-520 MHz	22 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-57-01-08N	8	380-520 MHz	15 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-57-01-12N	12	380-520 MHz	15 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/N(f)	1.75"H x 19"W x 14"D
42-57-01-08	8	380-520 MHz	17 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-57-01	16	380-520 MHz	10 dB	1.7 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-83A-01-08	8	746-901 MHz	19 dB	1.5 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D
42-83A-01	16	746-901 MHz	12 dB	1.5 dB	41 dBm	85-264 VAC, 47-63 Hz	12-26 V	N(f)/BNC(f)	1.75"H x 19"W x 14"D

Combline Preselector

792-824 MHz

TX RX Systems Inc. Manufacturers a comprehensive line of Preselectors and filters for a broad ranges of applications. Contact your Navair representative for specific product information.

COMBLINE PRESELECTOR 792-824 MHz

Model Number	**89-83C-01-32**
Power Rating	Rx Only
Pass Bandwidth	792-824 MHz
Passband Insertion Loss	1.5 dB nominal
Selectivity @ 776 & 851 MHz	>110 dB
VSWR	1.5:1 max.
Connectors (Input/Output	N-female
Mounting	19" Rack Mount Panel
Dimensions	3.5"H x 19"W x 7"D
Weight	8 lbs est.

DUPLEXERS

DUPLEXERS

Model Number

Model Number
28-37-02A

144-174 MHz • 2" Square

Model Number	30-37-01A
Power Rating	100 Watts
Minimum Separation	3 MHz
Channel Isolation	100 dB
Insertion Loss	1.5 dB
Connectors (Tx & Rx / Ant.)	BNC(F) / N(F)
Mounting	19" Rack Mount Bar
Dimensions	5.25"H x 19"W x 7.25"D

144-174 MHz • 6.625" Diameter

Model Number	28-37-02A
Power Rating	400 Watts
Minimum Separation	500 KHz
Channel Isolation	85 dB
Insertion Loss	1.5 dB
Connectors	N-female
Mounting	19" Rack Mount Bars
Dimensions	33"H x 19"W x 15"D

Model Number
28-70-02A

Model Number
28-70-15H

450-470 MHz • 4" Diameter

Model Number	28-70-02A
Power Rating	350 Watts
Minimum Separation	5 MHz
Channel Isolation	100 dB
Insertion Loss	0.6 dB
Connectors	N-female
Mounting	19" Rack Mount Bars
Dimensions	5.25"H x 19"W x 12"D

450-470 MHz • 1.25"x 2" Rectangular

Model Number	28-70-15H
Power Rating	100 Watts
Minimum Separation	5 MHz
Channel Isolation	80 dB
Insertion Loss	1.2 dB
Connectors (Tx & Rx / Ant.)	BNC(F) / UHF(F)
Mounting	Mobile Mount Plate
Dimensions	2.7"H x 5.2"W x 7.4"D

Model Number
28-89-01A

Model Number
26-89-03A

806-869 MHz • Single Frequency Pair

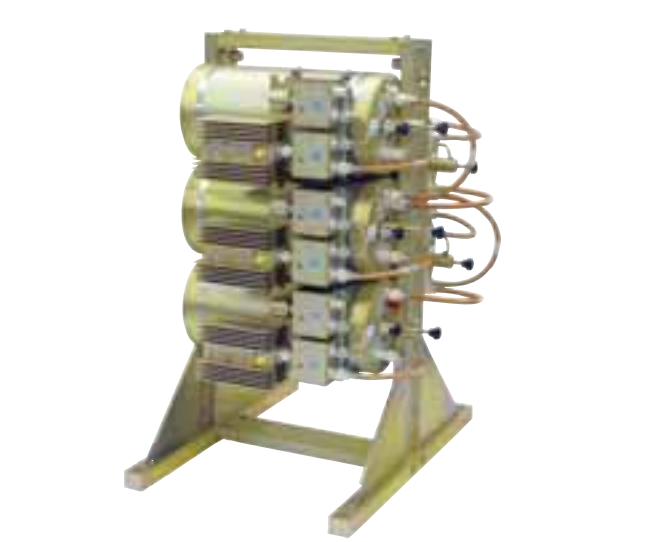
Model Number	28-89-01A
Power Rating	125 Watts
Minimum Separation	45 MHz
Channel Isolation	90 dB
Insertion Loss	0.8 dB
Connectors	N-female
Mounting	19" Rack Mount Bars
Dimensions	5.25"H x 19"W x 10"D

806-866 MHz • Trunking Combline

Model Number	26-89-03A
Power Rating	600 Watts
Minimum Separation	45 MHz
Channel Isolation	45 dB Tx / 77 dB Rx
Insertion Loss	0.5 dB Tx / 1.0 dB Rx
Connectors	N-female
Mounting	19" Rack Mount Panel
Dimensions	5.25"H x 19"W x 9"D

T-PASS® EXPANDABLE TRANSMITTER COMBINERS

746-869 MHz



TX RX Systems **T-Pass®** transmitter combiners utilize innovative, three-port bandpass cavities of patented design (U.S. Patents No. 4,249,147 and 4,493,422) and dual ferrite isolators to provide all the benefits of ordinary cavity/ferrite combiners:

- Significantly lower channel insertion loss than hybrid/ferrite combiners;
- High isolation between transmitters;
- High antenna-to-transmitter isolation;
- High intermodulation suppression
- Excellent transmitter noise suppression.

Unlike ordinary cavity/ferrite combiners, **T-Pass®** transmitter combiners are inherently expandable, broadband and easily adaptable to the most difficult duplex system design requirements.

Superior Expandability and Bandwidth

Ordinary cavity/ferrite combiners rely upon quarter-wave cable transformers, resonant stubs and star junctions for combining groups of two, four or five channels. Mechanical problems quickly develop in the process of trying to locate several groups of cavities in close proximity to each other. Additionally, because of the frequency-sensitive, narrowband nature of the cable transformers, operating bandwidth is usually restricted to about 6% of system center frequency.

T-Pass® combiner systems can be expanded one channel at a time with factory-tuned, easy-to-install expansion channel assemblies. Expansion is usually accomplished without modifications to the existing system, and it amounts to nothing more than placing a new channel assembly, or several, on top of the existing system. New channel frequencies can be above, below, or between existing channel frequencies.

T-Pass® channel interconnect cables are individually optimized to their own channel frequency. No compromises are necessary to accommodate other channel frequencies. Each channel can therefore be anywhere in a very broad frequency range. **T-Pass®** coupling loops and interconnect cables are elegantly designed to operate together as a broadband 50-ohm transmission line. Individual channel frequencies are therefore not restricted to a narrow operating bandwidth, as in the case of ordinary cavity or cavity/ferrite combiners. **T-Pass®** transmitter combiners are inherently capable of operating over bandwidths that span the entire 746-869 MHz frequency range.

Expansion Channel

746-869 MHz **T-Pass®** transmitter combiner channel assemblies consist of the following items:

- A 6.625” 3-quarterwave **T-Pass®** cavity filter;
- A dual ferrite isolator, with RF loads and coaxial cable for connection to cavity.
- An RF sampler to measure RF power reflected into the isolator output load
- Isolator and channel mounting hardware

Expansion assemblies (channel 2 and higher) are supplied with a thruline of the correct length for the new and existing channel frequencies. Starter channels (channel 1, bottom) are supplied with a short circuit on the T-Pass loop.

NEW *All T-Pass Expandable Transmitter Combiners comes with a 5 year OEM warranty.*

Trilogy's AirCell® cables embody innovative, waterproof air-dielectric design, consistent manufacturing, and quality assurance techniques in accordance with ISO-9001 procedures. The result is a coaxial cable with superior electrical and mechanical performance that completely eliminates water migration.

Trilogy's AirCell® Transline cable is designed for base station applications and is field proven in cellular, PCS, ESMR, paging, broadcast, and microwave applications. AirCell® Transline cables are available with impedances of 50 Ohms in 1/2", 5/8", 7/8", 1-1/4", and 1-5/8" sizes and with impedances of 75 Ohms in 1/2", 5/8", and 7/8" sizes.

To accompany our cables, Trilogy offers a complete line of connectors, accessories, and cable assemblies for all your wireless application needs.

AirCell® Transline cable is designed for the following applications:

PCS, Cellular, and Paging
Trilogy's cables and connectors are ideally suited to the high performance requirements of cellular and PCS applications. Transline cable's excellent insertion loss, VSWR, and intermodulation characteristics enhance both digital and analog systems. Water migration problems are non-existent because of the unique AirCell® design. Trilogy's high performance connectors are easily attached to form a solid watertight assembly that will provide trouble free communications for the life of your system.

Broadcast
Having the easiest installation in the industry makes AirCell® Transline cable the best choice for radio and television broadcast antenna feeders and for AM, FM, shortwave, VHF, and UHF frequencies.

Microwave
Trilogy's AirCell® Transline cable is perfect for all private and PTF microwave applications. Transline cable's superior VSWR performance has been specifically tested for microwave applications. The cable's strong, rugged design as well as flexibility makes it easy to install in any climate, and its weatherproof properties result in a life expectancy of over 15 years.

Enhanced Specialized Mobile Radio (ESMR)
The low attenuation and high shielding effectiveness of AirCell® Transline make it an ideal replacement for braided cable. The low insertion loss of Trilogy's AirCell® Transline cables typically provides double the coverage area for the same transmit power, or it can provide coverage to the same area and use lower transmit power.

Level of Fire Retardancy
The standard Transline cable construction uses a weather-resistant, black polyethylene jacket suitable for indoor, outdoor, or underground installations. For additional requirements regarding flame retardancy, AirCell® Transline cables are available with a non-halogenated, flame retardant jacket, which meets the most stringent fire retardancy requirements of UL, NEC, IEC, MSHA.

AirCell®

Trilogy COMMUNICATIONS, INC.

Best Plenum Cable For In-Building Applications

AirCell® Plenum Cable

The wireless solution for in-building broadband communication

WORLD'S LEADING PLENUM CABLE

Applications:

- Corporate Offices
- Hospitals
- Arenas
- Government
- Airports
- High Rise Buildings
- Shopping Centers
- Universities
- Hotels and Casinos

World Class Installations:

- NASA
- AOL Time Warner Headquarters
- Rockefeller Center
- Harvard University
- London's Heathrow Airport
- Apple Computer Headquarters
- U.S. Library of Congress
- Children's Memorial Hospital Chicago
- Las Vegas City Center

Full Broadband Capability
One Cable 75 MHz to 6 GHz

Meets Most Stringent Fire Codes
Complies With UL, NEC Fire Retardancy Requirements

Provides Continuous RF Coverage
Eliminating Dead Spots for Higher Quality Performance

Greater Flexibility and Durability
5 Inch Bend Radius and Endures Multiple Bends

Easiest Installation and Connectorization
Reduces Labor Time and Costs by up to 75%

100% Made in U.S.A.

50 Ohm Plenum, 1/2”

Description	Product Number
Standard Cable*	
1/2", Corrugated, Jacketed UL-910, CATVP	AP012J50
Physical Dimensions	
Center Dia., in (mm)	0.188 (4.78)
Dia. Over Dielectric, in (mm)	0.470 (11.94)
Dia. Over Outer Conductor, in (mm)	0.540 (13.72)
Dia. Over Jacket, in (mm)	0.615 (15.62)
Center Conductor	Copper Clad Aluminum
Outer Conductor	Corrugated Aluminum
Jacket Color	Off-white
Electrical Characteristics	
Maximum Frequency, GHz	10
Peak Power Rating, KW	35
DC Res., Ohms/1000 ft (1000m)	
Center	0.46 (1.51)
Outer	0.51 (1.67)
DC Breakdown, kV	4
Capacitance, pF/ft (m)	22 (72.12)
Inductance, mH/ft (m)	0.057 (0.187)
Jacket Spark, kV RMS	8
Impedance, Ohms	50
Velocity of Propagation	94%
Mechanical Characteristics	
Min. Bend. Radius, in (mm) – Single	2 (50.8)
Min. Bend. Radius, in (mm) – Multiple	5 (127)
Cable Weight, lb/ft (kg/m)	0.129 (0.192)
Bending Moment, ft.lb (N·m)	1 (1.4)
Tensile Strength, lb (kg)	250 (114)
Flat Plate Crush, lb/in (kg/mm)	78 (1.39)
Number of Bends, minimum	15
Number of Bends, typical	25
Temperature, °F (°C)	
Recommended Install	+5 to 194 (-15 to 90)
Recommended Storage	+5 to 194 (-15 to 90)
Operating	+5 to 194 (-15 to 90)

Attenuation and Average Power			
Frequency MHz	Attenuation dB/100 ft	dB/100m	Avg. Pwr. kW
5	0.159	0.56	17.6
10	0.225	0.82	12.0
20	0.319	1.10	8.95
30	0.391	1.35	7.29
50	0.507	1.74	5.66
88	0.676	2.30	4.28
100	0.722	2.47	3.98
108	0.751	2.56	3.84
150	0.889	3.03	3.20
174	0.960	3.26	3.03
200	1.03	3.50	2.80
300	1.27	4.32	2.27
400	1.48	5.01	1.96
450	1.57	5.32	1.85
500	1.66	5.62	1.75
512	1.68	5.70	1.73
600	1.83	6.20	1.58
700	1.99	6.70	1.47
800	2.13	7.17	1.37
824	2.19	7.28	1.35
894	2.26	7.61	1.29
960	2.35	7.90	1.24
1000	2.40	8.10	1.21
1250	2.71	9.09	1.08
1500	2.99	10.0	0.98
1700	3.20	10.0	0.98
1950	3.45	11.6	0.85
2000	3.50	11.7	0.84
2300	3.76	12.6	0.78
2400	3.92	12.9	0.77
3000	4.38	14.5	0.68

Standard conditions:
For attenuation, VSWR 1.0, ambient temperature 20°C (68°F)
For average power, VSWR 1.0, ambient temperature 40°C (104°F), inner conductor temperature 100°C (212°F), no solar loading

***Conduit cable (UL-444) is also available upon request.**

50 and 75 Ohm, Plenum and Plenum Radiating

	50-Ohm				75 Ohm
Cable Size, 1/2"	Plenum	Plenum	Plenum Radiating	Plenum Radiating	Plenum
Jacketing	**Product Code**	**Product Code**	**Product Code**	**Product Code**	**Product Code**
Jacketed UL-910, CATVP	AP012J50	APC012J50	AQ012J50	AQC012J50	AP012J75
Unjacketed UL-910	AP012U50				AP012U75
Characteristics					
Outer Conductor	Aluminum	Copper	Aluminum	Copper	Aluminum
Dia. Over Outer Conductor, in (mm)	0.540 (13.72)	0.540(13.72)	0.540 (13.72)	0.540 (13.72)	0.540 (13.72)
Dia. Over Jacket, in (mm)	0.615 (15.62)	0.615 (15.62)	0.615 (15.62)	0.615 (15.62)	0.615 (15.62)
Cable Weight, lb/ft (kg/m)					
Jacketed	0.129 (0.192)	0.19 (0.28)	0.122 (0.181)	0.17 (0.25)	0.104 (0.155)
Unjacketed	0.082 (0.122)				0.058 (0.086)
Min. Bending Radius, in (mm)	5 (127)	5 (127)	5 (127)	5 (127)	5 (127)
Impedance, Ohms	50	50	50	50	75
Velocity of Propagation	93%	96%	93%	96%	95%
Maximum Frequency, GHz	10	10	10	10	12
Peak Power Rating, Kw	35	40	35	40	35
Attenuation, dB/100 ft (dB/100 m)					
50 MHz	0.51 (1.74)	0.44 (1.44)	0.64 (2.11)	0.65 (2.12)	0.48 (1.57)
100 MHz	0.72 (2.47)	0.63 (2.05)	0.97 (3.19)	0.92 (3.01)	0.71 (2.32)
150 MHz	0.88 (3.03)	0.77 (2.53)	1.27 (4.15)	1.12 (3.69)	0.87 (2.85)
450 MHz	1.57 (5.32)	1.36 (4.46)	2.60 (8.52)	1.96 (6.42)	1.48 (4.87)
900 MHz	2.33 (7.64)	1.95 (6.41)	4.09 (13.4)	2.78 (9.13)	2.14 (7.03)
1000 MHz	2.40 (8.10)	2.07 (6.78)	4.27 (14.0)	2.94 (9.63)	2.26 (7.41)
1700 MHz	3.20 (10.0)	2.74 (9.00)	5.66 (18.6)	3.85 (12.63)	3.01 (9.88)
2000 MHz	3.50 (11.7)	2.99 (9.82)	6.43 (21.1)	4.18 (13.72)	3.29 (10.8)
2300 MHz	3.76 (12.6)	3.23 (10.59)	7.10 (23.32)	4.49 (14.74)	3.52 (11.6)
2400 MHz	3.92 (12.9)	3.22 (10.57)	7.34 (24.1)	4.59 (15.07)	3.60 (11.8)
3000 MHz	4.38 (14.5)	3.73 (12.25)	8.82 (29.0)	5.15 (16.90)	4.03 (13.2)
Avg Pwr Rating, kW			**Coupling Loss, dB, at 6ft (2m)**		**Avg Pwr Rating, kW**
50 MHz	5.66	6.34	49	55	2.93
100 MHz	3.98	4.46	49	55	1.97
150 MHz	3.20	3.63	49	56	1.61
450 MHz	1.85	2.06	61	63	0.94
900 MHz	1.29	1.43	63	65	0.65
1000 MHz	1.21	1.35	64	65	0.62
1700 MHz	0.98	1.02	65	66	0.46
2000 MHz	0.84	0.93	68	67	0.43
2300 MHz	0.78	0.86	69	68	0.40
2400 MHz	0.77	0.82	70	68	0.39
3000 MHz	0.68	0.75	70	69	0.35

RF Surge Protection

Table below allows comparison between the 3 technologies of RF coaxial surge protectors, in order to select the right solution regarding the application and the requirements.

Technology ***CITEL series***	**Gas tube** ***P8AX***	**DC Block** ***CXP-DCB***	**Quarter wave** ***PRC***
Principle	Sparkover	Sparkover + Filtering	Adapted short-circuit / selective band filter
Residual voltage	from 70V to 600 V in relation with the dV / dt , then arc regime (short - circuit of the line in the full bandwidth). RF signal disturbed during the protection o peration.	< 100 V Short-circuit of the line in the full bandwidth : RF signal disturbed during the protection operation.	< 20 V RF signal not disturbed during the protection operation.
Bandwidth	DC to 3GHz (dependent of the coaxial connector and of the impedance)	125-1000 MHz	Narrox band (GSM, DCS1800, PCS, DECT, GPS) Wide band (e.i. 1,3 - 2,8 GHz)
DC injection	Compatible	Not compatible	Not compatible
8/20s discharge current capability	10 kA	10 kA	Fonction de la connectique : 100 kA pour le 7/16, 50 kA pour le N
Life expectancy	Linked to the GDT stress	Linked to the GDT stress	Illimited
Connedtors	N, BNC, TNC, UHF, SMA, 7/16	N, BNC, TNC, F	7/16, N, TNC....

Installation

The efficiency of coaxial protectors is highly dependent on proper installation, in particular their connection to the earthing network of the installation.

The following installations rules must be strictly observed to insure the efficiency:

Equipotential bonding network : all the bonding conductors of the installation must be interconnected and connected to the installation earthing network.

Optimized connection of the protector to the bonding network: to reduce the residual voltages during lightning discharge currents, the connection of the protector to the bonding network must be as short as possible (less than 50 cm) and has a proper cross section (at least 4 mm).

The 'feedthrough mounting' versions meet perfectly all these requirements.

Warning: for good contact, remove carefully all paintings or insulating coatings.

Location of the protectors: they should preferably be placed at the entrance of the installation (to limit the penetration of lightning currents) and also near sensitive equipment (to enhance protection).

2 types of mounting

Feedthrough mounting

Direct mounting of the surge protector on the grounded frame at the installation entrance:

– perfect connection to the bonding network

– best location (conduction of the surge currents at the entrance of the installation)

– good mechanical withstand.

Alternative mounting

– connection to the bonding network by wire (4 mm minimum and shortest length possible).

CITEL

RF Coaxial Protectors

PRC – P8AX – CXP

PRC1800-7/16MF

P8AX25-B/MF

CXP Series

Citel's PRC Series is a Quarter Wave Stub (QWS) surge arrestor designed for specific frequency bands. The PRC does not utilize any active components and allows only the specified frequency to pass thus eliminating low frequency transients. This design allows for very high surge handling capacity up to 100kA 8/20us. The PR is conveniently installed in series with the line and can be mounted via the standard grounding screw or bulkhead.

Available with the most commonly used connectors including BNC, F, N, SMA, TNC, and 7/16 Din connectors or it can be custom made for your application with any combination of connector and gender types to eliminate the need for any adapters. .

The P8AX series coaxial surge protectors have been designed to protect antennas, microwaves, broadband applications, two-way radios, cellular, GPS and CATV equipment against lightning surges and electrical transients. They are a first line of defense for your sensitive equipment.

The P8AX series employs a patented replacable gas tube, are waterproof (IP65) and available with three grounding options: M6 ground screw, bulkhead or optional mounting bracket.

High-Frequency Surge Protection

- 20kA transient amps protection (8/20µs)
- 5kA transient amps protection (10/350µs)
- DC Pass to +/-48V
- VSWR < 1.2 Insertion Loss < 0.1dB
- Bi-directional, series installed
- Waterproof
- Removable GDT

The CXP Series has been designed to protect radio-base communications systems from lightning and electrical transients. This device is a dc blocked protector not to be used where transmitter combining is performed.

The CXP Series is designed to protect terminals connected to coaxial cables against transient overvoltages due to lightning strikes. The CXP Series is a combination of Gas Tubes and clamping diodes which allows a high discharge current with a low residual voltage and low insertion losses.

BIRD®
TECHNOLOGIES GROUP

Components

Attenuators

Bidirectional Couplers

Dividers/Couplers

Filters

Loads RF Switches

Signal Samplers

Navair National Sales/Service Team

Customer Service Programs

Navair Service Solutions

Maximize on your capital product purchasing through an extended service plan from Navair. Selection of the right plan for your organization allows you to purchase with confidence knowing you have full support from factory trained technicians.

Direct OEM Warranty Service

Navair is the factory service centre for Bird Electronics, General Dynamics, Tele-Instruments. Navair is the only Canadian service centre authorized to perform factory level modifications ensuring your instruments remain current.

Navair Direct Service

Navair offers product repair, calibration and certified calibration services to ensure your instruments are maintained to all OEM specifications. Navair staff have over seventy (70) years combined experience in the Communications, Test and Measurement Industry a tradition you can depend on. Navair Direct offers the following value added services:

- Service Report
- Repair Estimate
- Factory supplied hardware and software upgrades, which enhance your instrument performance.
- Ninety (90) day warranty on labour and parts replaced
- Direct factory replacement parts to ensure compliance with all OEM specifications.
- **"Preferred" Customer Status**

Place all your instrumentation under an annual or multiple year service agreement with Navair and enjoy a discounted labour rate on repair.

NAVAIR CALIBRATION SERVICES

Navair is a registered ISO 9002 company with state of the art calibration facilities. We offer complete calibration services coast to coast on most products sold by Navair in Canada.

In addition to Navair supplied products, we offer complete calibration services on Motorola, Wavetek, Helper, Bird, Tektronix, and Agilent products. Our "Depot Express" program was developed with our customers who demand the very best this industry can offer. As the factory authorized service centre in Canada for Bird Technologies, General Dynamics and Tel-Instuments products we will ensure full support for all your Test and Measurement products for yers to come.

"Depot Express" Calibration Service

- Four day turn around on all IFR/General Dynamics calibration
- Certificate of Calibration traceable to National standards
- Pick up and delivery service coast to coast
- Shipping carton available
- Automatic annual recall for calibration
- Instrument loaner available (subject to availability)

A complete "turnkey" operation let our customer service representatives manage your calibration requirements as a complete operation from pick up through final delivery.

MONTREAL/OTTAWA
800-668-7440
Extension 303

TORONTO/MARITIMES
Tel: (905) 565-1583
Fax: (905) 565-8325

VANCOUVER
800-668-7440
Extension 301

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